Academic program description form

University Name: Al-Furat Al-Awsat Technical University
the college/Institute: Polytechnic College Karbala
scientific department: Department of Mechanical Engineering Technology
Name of the academic or professional program: Mechanical techniques/production
Name of the final certificate: Technical Diploma
School system: annual
Date the description was prepared:25/12/2025
File filling date: 18 / 1 /2026

signature:
Head of Department Name:
Lec. Dr. Mohammad A. Naser
Date: 18/ 1 /2026

signature:
scientific Associate Name:
Assit. pro. Dr. Mohammed. Fadhil Neamha Al-yassery
Date: 12-3-2026

Check the file before
Division of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department :

Signature: Assit. pro. Ali Neamah Hasan
Date: /1/2026

Signature:
Approval of the Dean
Prof. Dr. Fadhil M. Dahir

Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department
Al-Furat Al-Awsat Technical University
Polytechnic College Karbala / Mechanical Engineering Technology
Department

Academic Program and Course Description Guide

2025-2026

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Description of the academic program:The academic program description provides a brief summary of its vision, mission, and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course description:It provides a necessary summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the learning opportunities available. It is derived from the program description.

Program vision: An ambitious picture for the future of the academic program to be an advanced, inspiring, motivating, realistic and applicable programme.

Program message: It briefly explains the objectives and activities necessary to achieve them, and also identifies the program's development paths and directions.

Program Goals: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum structure: All courses/study subjects included in the academic program are in accordance with the approved learning system (semester, annual, Bologna track), whether it is a requirement (ministry, university, college, or scientific department), along with the number of study units.

Learning Outcomes:A compatible set of knowledge, skills, and values that the student has acquired after the successful completion of the academic program. The learning outcomes for each course must be determined in a way that achieves the program objectives.

Teaching and learning strategies: They are the strategies used by the faculty member to develop the student's teaching and learning, and they are plans that are followed to reach the learning goals. That is, it describes all curricular and extracurricular activities to achieve the learning outcomes of the programme.

1. See the program

The Department of Mechanical Technology is one of the main technological departments that aims to create a technical system in the field of mechanics / production and metals branch to be a pioneer in providing reliable technical services with a solid scientific basis in service to society. Creating a sustainable environment by relying on artificial intelligence.

2. Program message

The Department of Mechanical Technology adopts a general mission based on providing advanced technical education that combines theoretical knowledge with practical application, to qualify specialized cadres capable of keeping pace with modern industrial developments and solving technical problems using innovative and sustainable methods, with a focus on meeting the needs of the local and global market.

The special message includes the following:

- Using computer and Internet technologies in education and training
- Activating the relationship with the private sector in the areas of training
- Follow up on the development of training plan curricula and then update laboratories and workshops.
- Interaction with the labor market and community needs for qualification and training.

3. Program Goals

The Mechanical Technology Department/Production Branch aims to achieve a number of objectives, including:

• Providing a curriculum that keeps pace with the latest developments in mechanical technology.
• Providing an educational environment that integrates practical training in workshops and laboratories with real-life projects.
• Instilling the values of sustainability and social responsibility in the design and implementation of engineering projects.
• Enhance communication and presentation skills to enable effective presentation of ideas and solutions.
• Encourage students to conduct graduation projects that serve various industrial sectors.
• Graduate technical personnel qualified to operate various mechanical processing machines and conduct laboratory tests on metals and alloys to determine their

physical and mechanical properties.

4. **Program accreditation**
No, the program does not have program accreditation

5. **Other external influences**
No/ There is no external party sponsoring the program A government program affiliated with the Karbala Technical Institute - one of the formations of the Al-Furat Al-Awsat Technical University?

6. **Program structure**

Program structure	**Number of courses**	**Study unit**	**percentage**	**comments ***
Enterprise requirements				
College requirements				
Department requirements				
summer training				
Other				

* Notes may include whether the course is core or elective.

7. Program description

Year/level	**Course or course code**	**Name of the course or course**	**Credit hours**	
			theoretical	**practical**
Second Year	**METE211**	**Technique Machine Parts**	**3**	
	METE212	**Manufacturing Processes 2**	**2**	**2**
	METE213	**Metallurgy**	**2**	**2**
	METE214	**Workshops 2**		**8**
	METE215	**Project**		**2**

	METE216	**Industrial Drawing**		**3**
	METE227	**Management & Occupational Safety**	**2**	
	METE228	**Computer Application 2**	**1**	
	METE239	**English Language 2**	**1**	
	/	**Arabic Language2**	**1**	
	/	**The crimes of the Baath regime in Iraq**	**1**	

8. Expected learning outcomes of the programme	
Knowledge	
1- To be familiar with choosing the appropriate metals for products and types of heat treatments. 2- To be familiar with the industrial drawing of various mechanical installations. 3- To be familiar with the various metal manufacturing processes for various products. 4- To be familiar with all mechanical and metallurgical testing methods. 5- To become familiar with all types of measuring devices and surface quality devices. 6- To be able to organize the technological path of production processes	Learning Outcomes1
Skills	
1 - Skill in using all mechanical operating machines 2- Skill in using all measuring and testing devices 3 - Skill in performing various welding and plumbing works and conducting microscopic examinations.	Learning Outcomes2
1- Skill in working on all machines. 2- The skill of planning and preparing a technological path for production processes. 3- The skill of planning and implementing emergency and periodic maintenance of machines and machines. 4- The skill of preparing a training lecture and	Learning Outcomes3

delivering it to the trainees.	
Value	
1- Offering a product design and asking to think about developing an integrated program for its production 2 - Encouraging the development of thought in memorization and speculation and stimulating it towards critical thinking. 3- Developing Internet research skills to expand the cognitive horizon. 4- Using brainstorming to produce creative ideas for some gifted students.	Learning Outcomes4

9. **Teaching and learning strategies**
Participatory education Student-centered education Using PowerPoint Show scientific films Use an oil board Divide students into groups Using deadlock-breaking methods through a set of intellectual exercises and games Lecture, professional training, laboratory, project Field visits

10. Evaluation methods
- Daily exams - Quarterly exams - final exams - Laboratory reports - Scientific projects

11.education institution				
Faculty members				
Preparing the teaching staff		**Special requirements/skills (if any)**	**Specialization**	**Scientific rank**

		lecturer	Permanent teaching			private	general	
1)	Dr. Mahir Hameed Majeed		✓			Applied mechanics	Mechanical Engineering	
2)	Dr. Sanaa Ali Hamza		✓			Industrial engineering	Production and metallurgy engineering	
3)	Dr.Mohammad Abdul Kadhim Naser		✓			Applied mechanics	Mechanical Engineering	
4)	Dr. Ahmed Abdulameer Subeh		✓			Polymer engineering	Materials engineering	
5)	Dr. Zainab Abdul Rahem Abdul Hassan Nasser		✓			Polymer engineering	Materials engineering	
6)	Dr. Sarah Muhi Jawad		✓			Metal Engineering	Materials engineering	
7)	Hussein younus razzaq		✓			Machine design	Mechanical Engineering	
8)	Hamzah Kadhim Hassan		✓			Machine design	Mechanical Engineering	
9)	Intisar Rasheed Saleh		✓			capacity	Mechanical Engineering	
10)	SATTAR JABBAR METTIB		✓			Machine design	Mechanical Engineering	
11)	Hussein Mohammed Sadeq Jafar		✓			Materials engineering	Materials engineering	
12)	Khalil Abdul-Harr		✓			Machine Design	Mechanical Engineering	
13)	Zahraa Saad		✓			Physical Sciences	Physical Sciences	
14)	Laith Haider Hameed Kazem		✓			Physical Sciences	Physical Sciences	
15)	Rania Ali Hamoody	عقد				Metal engineering	Materials engineering	

12) Professional development

Orienting new faculty members

- Seminars on administrative work
- Seminars on examination instructions

(Briefly describes the process used to orient new, visiting, full-time, and part-time faculty at the institution and department levels.)

Professional development for faculty members

- Teaching methods courses
- Specialized courses

(Briefly describes the academic and professional development plan and arrangements for faculty members such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.)

13.Acceptance criterion

(Developing regulations related to admission to the college or institute, whether central admission or others mentioned)

Chapter One: Conditions and controls for central admission to Iraqi universities:

1-1 - General conditions for admission

A student who is accepted into universities is required to be:

1. Iraqi nationality.
2. Possessor of an Iraqi preparatory school certificate supported by certification from the General Directorate of Education in the governorate or an equivalent certificate.
3. The student must be born1999 onwards.
4. Successful in the medical examination according to the conditions specific to each study, and students accepted into colleges and institutes are required to examine (CBC) or (Hb-Electrophoreis) in the relevant examination centers, provided that the blind student who meets the conditions for applying for appropriate humanitarian studies must submit it through central admission.
5. Full-time study, and it is not permissible to combine work and study (at the same time in colleges and morning institutes. This includes employees of all government institutions. In order for them to continue studying, they must obtain a study leave from their departments, starting in accordance with the instructions in force. It is not permissible to combine two studies either, and if it is proven otherwise, write To the Ministry to cancel his admission. As for students who have two different admissions for the same year, the student

has the option of canceling one of them.

6. Of our graduates:

a. Current academic year.

B. The previous academic year is not accepted centrally into any college or institute, and they are accepted within the channel of accepting students from graduates of the previous academic year according to the minimum limits for their year of graduation, provided that they do not enroll in one of the private evening studies, private government morning education, one of the colleges affiliated with the two endowments, or affiliated institutes. to other ministries).

7. International students for the academic year (202/2023) have the right to apply through the electronic portal of the Department of Studies, Planning and Follow-up and through their electronic form. The electronic application is approved after submitting a temporary equivalence certificate from the Ministry of Education, Directorate of Equivalency and Certificates. As for graduates of the previous year, the application is For admission through the Central Admissions Department, Expatriates Division.

8. Non-Iraqi students who hold an Iraqi preparatory certificate and are accepted centrally will be notified

In writing, review the Central Admissions Department, Expatriates Division, stating their exemption or request for tuition fees in foreign currency in accordance with the controls contained in Chapter Seven of the Student Affairs Procedures Manual and admission controls and conditions.

a-2- The general principles adopted by the central admission system:

Nomination of students for admission to colleges and institutes shall be done according to the central admission system implemented electronically

According to

The following foundations:

1. The student is accepted according to the choices stated in the application form through the electronic portal of the Department of Studies, Planning and Follow-up and on the basis of competition in the aggregate.

2. Students must:

a. Graduates of the biological and applied branches: fill out (50) choices in the electronic form, provided that the number of institutes is not less than (10).

B. Graduates of the literary branch: fill out at least (25) choices and up to (50) choices in the electronic form, provided that the number of institutes is not less than (10).

C Graduates of the Arts Branch: fill out (10) Choices in the electronic form, provided that the number of institutes is not less than (2).

3. The student submitting the admission form is not obligated to accept him

according to the choices presented by him once and for all, as his acceptance depends on his competition with the rest of the students according to the established principles.
4. Application to the College of Law (Law) is limited to residents of the governorate exclusively, and the student is not entitled to apply to the aforementioned college in universities located outside his governorate.
5. Application to engineering colleges is through the electronic form according to the departments.
6. Application to the English Language Department in the Colleges of Education and Human Sciences is through the electronic form according to the department.
7. For the purposes of differentiation in admission:
a. The percentage is calculated (8) of the added foreign languages degree and is added to the student's total
B. An additional mark is calculated on top of the average for first-year graduates (except for students included in the system).
attempts).
requester.
8. The principle of differentiation lessons does not apply except in the case of competition for the last seats in the admission plan
Approved.

14.The most important sources of information about the program

- Similar programs locally and regionally
- Labor market need
- Modern methodological books

15. Program development plan

- Studies on curriculum development
- Seminars with employers
- Labor market opinion questionnaires on school curricula
- Increasing practical training in workshops and laboratories using modern equipment.
- Cooperating with industrial companies to provide field training opportunities for students.
- Implementing applied projects that simulate the real work environment.
- A proposal to teach (engineering project management) to ensure students' readiness for the labor market

Program skills chart

				Outputs Learning required from the program											
the year / the level	Code The decision	name The decision	decision type (major or assistant)	Knowledge				Skills				Value			
				a 1	a 2	a 3	a 4	B 1	B 2	B 3	B 4	C1	C2	C3	C4
The First year	“Its academic system has been converted to the semester system according to the Bologna pathway, starting from this year (2025–2026).”														
the Second year	METE211	Technique Machine Parts	major	✓	✓			✓	✓	✓		✓			
	METE212	Manufacturing Processes 2	major	✓	✓			✓	✓	✓		✓			
	METE213	Metallurgy	major	✓	✓			✓	✓	✓		✓			
	METE214	Workshops 2	major	✓	✓			✓	✓	✓		✓			
	METE215	The project	major	✓	✓			✓	✓	✓		✓			
	METE216	Industrial Drawing	major	✓	✓			✓	✓	✓		✓			
	METE227	Management & Occupational Safety	assistant	✓	✓			✓	✓	✓		✓			
	METE228	Computer Application 2	assistant	✓	✓			✓	✓	✓		✓			
	METE239	English Language	General	✓	✓			✓	✓	✓		✓			

	2														
-	Arabic Language 2	General	✓	✓			✓	✓	✓		✓				
-	The crimes of the Baath regime in Iraq	General	✓	✓			✓	✓	✓		✓				

- **Please situation Signal in Squares the interview For outputs Learning Individuality from the program Submissive For evaluation**

Course Description Form

1. Course Name:
Machine parts technology
2. Course Code:
METE211
3. Semester / Year:
2025-2026
4. Description Preparation Date:
10/12/2025
5. Available Attendance Forms:
Direct
6. Number of Credit Hours (Total) / Number of Units (Total)
90
7. Course administrator's name (mention all, if more than one name)
Name: Intisar Rasheed Saleh Email: intisarkhursan@atu.edu.iq
8. Course Objectives

Course Objectives	**Machine parts technology aims to:** • **Explains the role of machine parts in the machine system (machine)** • **There is a relationship between them (i.e. the parts of the machines and their system)** • **Finding calculations for designing these parts and determining the factors affecting them**

9. Teaching and Learning Strategies

Strategy	A- Cognitive objectives Introducing students to how to design machine parts by conducting calculations of stresses and forces affecting them. B - The skills objectives of the course. The student's proficiency in using a scientific calculator and using the best, fastest and most accurate methods in engineering calculations to design machine parts

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understand basic mechanical properties of materials. Interpret stress–strain behavior.	Review of Strength of Materials	Continuous guidance of students by the professor during the daily lecture	By solving exercises
2&3	6	Classify and describe different types of	Riveted Joints. Types of Riveted Joints, Design of	Continuous guidance of students by the professor during the	By solving exercises

		riveted joints, and explain their applications and structural behavior under loading. Design riveted joints and evaluate their efficiency, including calculation of stresses, failure modes, and joint performance	Riveted Joints, Efficiency of Riveted Joints.	daily lecture	
4&5	6	Identify and classify different types of welded joints, and explain their structural behavior under various loading conditions. Design welded joints and perform basic strength calculations, including stress analysis and evaluation of possible failure modes.	Welded Joints, Types of Welding Joints, Design of Welding Joints	Continuous guidance of students by the professor during the daily lecture	By solving exercises
6&7	6	Explain the principles and applications of screwed joints, including the design of bolts for fastening under different loading conditions. Design and analyze bolts for power transmission, including calculation of stresses, torque requirements, and possible modes of failure.	Screwed Joints, Design of Bolts for Fastening, Design of Bolts for Power Transition	Continuous guidance of students by the professor during the daily lecture	By solving exercises
8&9	6	Analyze and design keyed joints, including classification of different types of keys and performing strength calculations for the design of a	Keyed Joints, Types of Keys, Design of Sunk Key.	Continuous guidance of students by the professor during the daily lecture	By solving exercises

		sunk key under given loading conditions			
10&11	6	Analyze and design frictional clutches, including classification of different types and calculation of torque transmission capacity, frictional forces, and relevant design parameters under given operating conditions.	Frictional Clutches, Types of Frictional Clutches, Design of Frictional Clutches.	Continuous guidance of students by the professor during the daily lecture	By solving exercises
12&13	6	Classify different types of springs and perform basic design calculations, including determination of stresses, deflection, and load-carrying capacity under given conditions.	Types of Springs, Design of Springs.	Continuous guidance of students by the professor during the daily lecture	By solving exercises
14&15	6	students will be able to identify the main types of belts used in power transmission systems and apply fundamental design principles and calculations to select and design an appropriate belt drive system based on given operational requirements.	Types of Belts, Design of Belts.	Continuous guidance of students by the professor during the daily lecture	By solving exercises
16&17	6	By the end of this topic, students will be able to analyze the forces and stresses acting on shafts and apply fundamental mechanical design principles to determine the appropriate dimensions and material selection for safe and efficient shaft	Design of Shafts	Continuous guidance of students by the professor during the daily lecture	By solving exercises

		design under given loading conditions			
18&19	6	explain the principles of journal bearing operation and apply design calculations to determine the appropriate dimensions, materials, and lubrication requirements for safe and efficient bearing performance under specified loads and operating conditions.	Design of Journal Bearings	Continuous guidance of students by the professor during the daily lecture	By solving exercises
20	3	students will be able to evaluate the operational requirements of a mechanical system and select the appropriate type and size of ball bearing based on load capacity, speed, life expectancy, and application-specific factors.	Selection of Ball Bearings	Continuous guidance of students by the professor during the daily lecture	By solving exercises
21&22	6	students will be able to use the Lewis equation to calculate the bending stress on gear teeth and apply it to design gears that can safely transmit the required power without failure.	Design of Gears by Lewis Equation	Continuous guidance of students by the professor during the daily lecture	By solving exercises
23&24	6	analyze gear train configurations, calculate speed ratios and torque transmission, and select appropriate gear arrangements to achieve desired mechanical performance.	Gears Trains	Continuous guidance of students by the professor during the daily lecture	By solving exercises
25&26	6	students will be able to design a simple	Design of Simple Gears Box	Continuous guidance of students by the professor during the	By solving exercises

		gearbox by selecting suitable gears, calculating speed ratios, and determining gear dimensions to meet specified power transmission and operational requirements.		daily lecture	
27&28		explain the operation of worm gears, analyze their speed reduction and torque transmission characteristics, and apply basic design calculations to select or design worm gear systems for specific applications.	Worm Gears	Continuous guidance of students by the professor during the daily lecture	By solving exercises
29&30		By the end of this topic, students will be able to describe the function and types of cams, analyze cam motion and follower displacement, and apply basic design principles to create cam profiles for desired mechanical motion.	Cams	Continuous guidance of students by the professor during the daily lecture	By solving exercises

11. Course evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Methodological decision
Main references (sources)	1-Strength of Material by Ferdinal L.Singer 2-Strength of Material by R. S. Khurmi. 3-Machine Design by R. S. Khurmi, J.K. Gupta. 4-Machine Design by Paul H. Black. 5-Schaums Outline Series of Machine Design b Hall, Holowenko ,Laughin
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Specialized websites

13. Program Development Plan

Machine Parts Technology Program Development Plan

This program provides students with the technical skills needed for machining, CNC programming, toolmaking, and mechanical maintenance. It combines theoretical knowledge with hands-on training to prepare students for careers in advanced manufacturing.

The curriculum covers core topics such as machine parts and manufacturing basics, materials and metallurgy, machining processes (lathe, milling, grinding), CAD and CNC programming, precision measurement, quality control, and workplace safety. Advanced modules include CNC automation, tool and die making, hydraulics, and Industry 4.0 applications.

Training methods include hands-on workshops with CNC and manual machines, simulation-based learning using CAD/CAM software, and industry internships. Resources such as CNC machines, lathes, mill equipment, measurement tools, and safety gear will be used to ensure practical learning.

Graduates can earn certifications like NIMS and OSHA Safety and pursue careers as machinists, CNC programmers, toolmakers, and maintenance technicians. Implementation will follow a phased approach: curriculum development and industry partnerships (3-6 months), pilot courses (6-12 months), and full-scale program expansion (1-3 years).

Course Description Form

1. Course Name:
Metallurgy
2. Course Code:
METE213
3. Semester / Year:
2025-2026
4. Description Preparation Date:
December, 2025
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
120 Hours /240 Units
7. Course administrator's name (mention all, if more than one name)
Name: Sanaa Ali Hamza **Email: inkr.san@atu.edu.iq**
8. Course Objectives

Course Objectives	• Providing the student with sufficient knowledge of the types of metals and alloys, their mechanical properties, their crystal structure, and the different types of defects that occur in them during the processing and forming processes. • Providing the student with sufficient knowledge and skill in studying heat treatments, how to implement them practically, and their effects on the properties and structure of metals. • Providing the student with sufficient knowledge and skill in identifying material resistance tests, working on their equipment to implement them practically, and drawing the curves related to them. • Providing the student with sufficient knowledge and skill in working with microscopes to examine and draw the internal structures of metals and alloys. • Providing the student with knowledge and skill in performing

	all types of surface hardening of metals; Knowing corrosion, its types, the mechanism of its occurrence, and how to conduct corrosion experiments

9. Teaching and Learning Strategies

Strategy	1- Participatory education 2- Student-centered education 3- Using PowerPoint 4- Showing scientific films 5- Using an oil board 6- Dividing the students into groups 7- Using deadlock-breaking methods through a set of intellectual exercises and games

10. Course Structure: **Metallurgy (Theoretical)**

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First week	2	Distinguishing the types of crystallization - knowing the conditions of the plumbing process	Definition of mineralogy; crystallization; dendritic crystallization; The effect of cooling rate on the structure of metals	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
Second week	2	Know the defects of castings	Installation of billets (casting solidification)	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion

			Common defects in castings		
Third week	2	How to derive the crowding factor; Determine the coordinates of the atom and the coordinates of the atomic planes	Atomic crowding coefficient; crystallographic directions; crystal levels; The phenomenon of interconnection	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
Forth week	2	Identify and distinguish the types of defects in crystal lattices	Crystal lattice defects; Raster; Sin	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
Fifth week	2	Know the basic methods of plastic formation and how they occur	Flexible forming and plastic forming (slipping; twinning)	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
sixth week	2	Know the difference between hot and cold formation and the circumstances in which each occurs	Emotional toughness; cold forming; Hot forming	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion

seventh week	2	Learn about the processing of high-hardness metals by the recovery procedure; recrystallization; Crystal growth	restoration; recrystallization; Crystal growth	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
eighth week	2	Study the stress-strain curve, know its importance, and determine its basic points	Stress-strain curves in bending; Extension; fracture; Types of fracture; Transition from ductile to brittle fracture	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
ninth week	2	Study of fatigue as a model for repeated tests and study of the fatigue curve and fatigue fracture	fatigue; Fatigue mechanism; Factors affecting fatigue limit; Fatigue resistant materials	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
tenth week	2	Familiarize yourself with the	Creep; The mechanism of	PowerPoint, blackboard, scientific films, participatory	Daily exams, direct

		creep test and creep curve	creep; Creep resistant materials	education	questions and discussion
eleventh week	2	Study and become familiar with a group of vocabulary related to drawing a heat balance diagram	compound; phase; solid solution; the system; poise; alloy composition; mechanical mixture; Eutectic	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
twelfth week	2	Learn how to create and draw heat equilibrium diagrams for solid-solution and eutectic alloys	Thermal equilibrium diagram for a completely dissolved binary system in the liquid and solid states. Thermal equilibrium diagram for a binary system that is completely dissolved in the liquid state and insoluble in the solid state (eutectic)	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion

thirteenth week	2	Learn how to create and draw heat equilibrium diagrams for alloys with limited melting	Thermal equilibrium diagram for a binary system that has complete solvation in the liquid state and limited solvation in the solid state	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
fourteenth week	2	Learn how to create a heat equilibrium diagram for alloys that form chemical compounds	Thermal equilibrium diagram for a binary system that is completely dissolved in the liquid state and forms a chemical compound when frozen	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
fifteenth week	2	Identify the iron-carbon diagram and the important phase transitions in it	Iron; Dissolution of carbon in iron; Heat equilibrium diagram for the iron-carbon	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion

			system; The most important interactions included in the diagram		
sixteenth week	2	Identify the iron-carbon diagram and the important phase transitions in it	Completion of the heat equilibrium diagram for the iron-carbon system	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
seventeenth week	2	Identify the important phase transitions in the eutectoid part	Austenite formation; Mechanism of transforming perlite into austenite	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
eighteenth week	2	Identify the (T.T.T) cooling curve at constant temperatures and the (C.C) cooling curve continuously	Austenite transformations by constant temperature and transformations by continuous cooling	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion

nineteenth week	2	Identify the basic and important heat treatments for carbon steel	Thermal treatments (annealing; normalizing; hardening)	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
twentieth week	2	Continue learning about the basic and important heat treatments for carbon steel	Completion of thermal treatments (hardening and reviewing); Sub-zero thermal coefficients; Aging	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
Twenty-first week	2	Study and understand surface hardening methods for carbon steel (carburizing, nitrating, annealing)	Surface hardening (carburization of all types and the heat treatments that follow it), nitrating; Sindah	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
twenty-second week	2	Study the need to use alloy steel; Its importance; Classification: The effect of adding	alloy steel; The effect of alloying elements on the properties of steel	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion

		alloying elements on the properties of steel			
twenty-third week	2	Study and learn about stainless steel and tool steel; Types; Importance and use	stainless steel; Tools steel	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
twenty-fourth week	2	Identifying cast iron; types; Its thermal treatment; The form of carbon and the factors affecting it	Cast iron production and its heat treatments	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
twenty-fifth week	2	Identifying cast iron; types; Its thermal treatment; The form of carbon and the factors affecting it	Supplementing the production of cast iron and its most important types	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
Twenty-sixth week	2	Corrosion study; The mechanism of its occurrence;	Definition of corrosion; Direct and indirect	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and

		The costs associated with its occurrence	economic costs of corrosion; manifestations of corrosion; Mechanism of corrosion		discussion
twenty-seventh week	2	negative study; Faraday's law; Some types of corrosion	negativity; Faraday's law; General corrosion; galvanic corrosion; Cavernous erosion	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
twenty-eighth week	2	Complementary to other types of corrosion	Soil erosion; Voluntary corrosion; Corrosion between crystals; Stress corrosion	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
twenty-ninth week	2	Learn the correct way to choose materials to avoid corrosion	The optimal choice of material; Ocean softening; Design and operation	PowerPoint, blackboard, scientific films, participatory education	Daily exams, direct questions and discussion
thirtieth week	2	Study and classify	Corrosion	PowerPoint,	Daily exams,

		methods of corrosion prevention	prevention methods	blackboard, scientific films, participatory education	direct questions and discussion

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	كتاب مبادئ هندسة المود – د. حسين باقر رحمة الله ملزمة المعادن النظري المنهجية
Main references (sources)	Engineering Metallurgy, (part 1) , Higgins, (Capright 1973, R.A.H) Metallurgy for Engineering-Rollason, (Third Eddi. 1961) Engineering Physical Metallurgy, Prof. Y. Lnthin
Recommended books and references (scientific journals, reports...)	المواد الهندسية واختباراتها- د. قحطان الخزرجي الميتالورجيا الهندسية- د. عارف ابو صفية الميتالورجيا الهندسية – د. عبد الرزاق اسماعيل مبادئ علم المعادن- د. عادل محمود حسن
Electronic References, Websites	البحوث المنشورة عبر مواقع الانترنت حسب مواضيع المقرر

13. Course Structure: Metallurgy (Practical)					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First week	2	Visit existing metal laboratories and learn about the	Introduction to the metallurgy laboratory	View existing laboratories	-

		equipment in them	(resistance laboratory, heat treatment laboratory, microscopic examination and sample preparation laboratory)		
Second week	2	Learn how to conduct a tensile test on steel samples. gecko; Copper and drawing the stress-strain curve	Simple tension experiment; elongation curve; Stress-strain curve; Flexible and plastic forming; Modulus of elasticity; Maximum tensile strength (U.T.S.); relative elongation; Decrease in cross-sectional area	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
Third week	2	Learn about conducting a pressure experiment on steel samples.	pressure experience; load curve; elongation; Stress-strain curve; The relationship of	PowerPoint; oil board; science films; Conduct the experiment	- Laboratory reports - Student performance examination

		Aluminum	length to cross-sectional area; Factors affecting the experience of stress	on the device in the laboratory	forms - Gradual evaluation form
Forth week	2	Acquire sufficient skill in conducting the Brinell hardness test	Hardness test (Brinnell method)	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
Fifth week	2	Acquire sufficient skill in conducting the Vickers hardness test	Hardness test (Vickers method)	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
sixth week	2	Acquire sufficient	Hardness test	PowerPoint;	- Laboratory

		skill in conducting the Rockwell-B hardness test	(Rockwell-B)	oil board; science films; Conduct the experiment on the device in the laboratory	reports - Student performance examination forms - Gradual evaluation form
seventh week	2	Gain sufficient skill in conducting the Rockwell-C hardness test	Hardness test (Rockwell-C)	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
eighth week	2	Acquire sufficient skill in performing fatigue using the rotary bending method and drawing the fatigue curve	Fatigue test	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation

					form
ninth week	2	Gain sufficient skill in conducting the creep test at room temperature and drawing the creep curve	Creep test	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
tenth week	2	Acquire sufficient skill in performing Impact using the Izod and Charpy methods and distinguishing the type of sample crusher	Impact test (Izod-Charpy)	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
eleventh week	2	Acquire sufficient skill in performing sample preparation for the purpose of microscopic	Acquire sufficient skill in performing sample preparation operations for the purpose of	PowerPoint; oil board; science films; Conduct the experiment	- Laboratory reports - Student performance examination

		examination	microscopic examination. Preparing samples for microscopic examination (smoothing, polishing, exposure, examination under a microscope)	on the device in the laboratory	forms - Gradual evaluation form
twelfth week	2	Acquire sufficient skill in creating a heat equilibrium diagram for a solid solution	Establishing a heat equilibrium curve for a fully melted binary alloy in the liquid and solid states	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
thirteenth week	2	Gain sufficient skill in creating a heat balance diagram for the eutectic	Establishing a heat equilibrium curve for a binary alloy that is completely melted in the liquid state and insoluble	PowerPoint; oil board; science films; Conduct the experiment on the device	- Laboratory reports - Student performance examination forms

			in the solid state.	in the laboratory	- Gradual evaluation form
fourteenth week	2	Acquire sufficient skill in creating a heat equilibrium diagram for alloys with limited melting	Establishing a heat equilibrium curve for a binary alloy that is completely melted in the liquid state and has limited melting in the solid state.	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
fifteenth week	2	Acquire sufficient skill in creating a heat equilibrium diagram for alloys of chemical compounds	Establishing a heat equilibrium curve for a binary alloy that completely melts in the liquid state and forms a chemical compound when frozen.	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
sixteenth week	2	Acquire sufficient skill to microscopically	Examining different types of (alloys, solid	PowerPoint; oil board; science films;	- Laboratory reports - Student

		examine the products of creating heat balance diagrams	solutions, mechanical mixture, chemical compound) under the microscope	Conduct the experiment on the device in the laboratory	performance examination forms - Gradual evaluation form
seventeenth week	2	Acquire sufficient skill for microscopic examination and determination of the percentage of carbon in non-heat-treated carbon steel	Samples of unheated carbon steel are examined under a microscope and the carbon percentage is calculated	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
eighteenth week	2	Acquire sufficient skill to microscopically examine samples of cast iron (white, gray, spherical)	Examination of samples of cast iron (white, gray, spherical)	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form

nineteenth week	2	Acquire sufficient skill in performing the recovery and recrystallization processes and microscopic examination before and after them	Conduct the recovery and recrystallization process, examine it microscopically, and compare it with the examination before the recovery and recrystallization process.	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
twentieth week	2	Acquire sufficient skill in conducting thermal treatments through the hardening process, microscopic examination, and comparing properties before and after the hardening procedure.	hardening of carbon steel and comparing composition and properties before hardening	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
Twenty-first week	2	Gain sufficient skill in conducting the	tempering carbon steel and measuring	PowerPoint; oil board;	- Laboratory reports

		tempering, measuring hardness, and comparing it before and after the tempering	hardness before and after tempering	science films; Conduct the experiment on the device in the laboratory	- Student performance examination forms - Gradual evaluation form
twenty-second week	2	Acquire sufficient skill in performing the hardening process in different media and comparing the properties and microscopic composition of different liquids	Acquire sufficient skill in performing the hardening process in different media and comparing the properties and microscopic composition of different liquids	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
twenty-third week	2	Gain sufficient skill in conducting the Jomney test to measure hardening ability	Conduct a Jomney test to measure hardening ability	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation

					form
twenty-fourth week	2	Acquire sufficient skill in performing surface hardening using hard carburizing	Surface hardening using hard carburizing	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
twenty-fifth week	2	Acquire sufficient skill in examining various samples of alloy steel; Stainless steel under a microscope	Examination of various samples of alloy steel; Stainless steel under a microscope	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
Twenty-sixth week	2	Gain sufficient skill in examining different samples of copper and gecko under a	Examining various samples of copper and brass under a microscope	PowerPoint; oil board; science films; Conduct the experiment	- Laboratory reports - Student performance examination

		microscope		on the device in the laboratory	forms - Gradual evaluation form
twenty-seventh week	2	Acquire sufficient skill in microscopic examination of various aluminum samples	Microscopic examination of various samples of aluminum	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
twenty-eighth week	2	Gain sufficient skill in conducting a chemical corrosion experiment; Create a simple corrosion cell	Conduct a chemical corrosion experiment; Create a simple corrosion cell	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form
twenty-ninth week	2	Acquire sufficient skill in conducting	Conducting a corrosion	PowerPoint; oil board;	- Laboratory reports

		a corrosion protection experiment using the cathodic protection method	protection experiment using the cathodic protection method	science films; Conduct the experiment on the device in the laboratory	- Student performance examination forms - Gradual evaluation form
thirtieth week	2	Acquire sufficient skill in conducting the corrosion protection experiment using the anodic protection method	Conducting an experiment on corrosion protection using the anodic protection method	PowerPoint; oil board; science films; Conduct the experiment on the device in the laboratory	- Laboratory reports - Student performance examination forms - Gradual evaluation form

14. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
15. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• ملزمة المعادن العملي المنهجية • ملزمة معدة من قبل مدرس المادة
Main references (sources)	• كتاب مبادئ هندسة المعادن- د. حسين باقر رحمة الله • المواد الهندسية واختباراتها- د. قحطان الخزرجي
Recommended books and references (scientific journals, reports...)	• الميتالورجيا الهندسية- د. عارف ابو صفية • الميتالورجيا الهندسية – د. عبد الرزاق

اسماعيل • مبادئ علم المعادن- د. عادل محمود حسن	
الفيديوات المنشورة عبر النت حول اجراء التجارب العملية الفيديوات المسجلة من قبل تدريسي المادة للتجارب العملية والمنشورة في القناة الخاصة بالمختبر عبر التلكرام	Electronic References, Websites

Course Description Form

1. Course Name:
Industrial computer drawing
2. Course Code:
METE216
3. Semester / Year:
2025-2026
4. Description Preparation Date:
10-12-2025
5. Available Attendance Forms:
Direct
6. Number of Credit Hours (Total) / Number of Units (Total)
90
7. Course administrator's name (mention all, if more than one name)
Name: Intisar Rasheed Saleh Email: intisarkhursan@atu.edu.iq
8. Course Objectives

Course Objectives	The Industrial Computer Drawing course aims to: equip students with the skills to create, interpret, and modify technical drawings using computer-aided design (CAD) software. The course focuses on precision, industry standards, and practical applications in mechanical, electrical, and civil engineering fields.
9. Teaching and Learning Strategies	
Strategy	• **Hands-on CAD Training & Project-Based Learning** – Students practice 2D/3D drafting using software like AutoCAD and SolidWorks, working on real-world projects and simulations to enhance technical skills. • **Industry Integration & Assessments** – Guest lectures, case studies, and portfolio-based evaluations ensure students meet industrial standards, with regular feedback and practical exams to track progress.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	The student should be able to apply the rules of engineering drawing (lines, projections, sections, and dimensioning) and prepare accurate	General review of first grade topics, geometric lines, projections, sections, setting dimensions using AutoCAD	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting

		engineering drawings using Auto-CAD software according to standard criteria.			
2 & 3	6	The student should be able to distinguish between types of screws and nuts, analyze their uses, and draw detailed and assembly diagrams of screw fastening methods according to standard specifications.	Methods of connection using screws, types of screws, types of nuts, with a drawing of a board	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting
4 & 5	6	The student should be able to identify the types of pins and their uses in transmitting motion and torque, and draw an assembly diagram showing how they are fixed in columns and gears.	Connecting with screws, its types, uses, drawing a group board.	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting
6&7	6	The student should be able to interpret and represent standard welding symbols and draw an assembly diagram showing the positions and types of welding in mechanical assemblies.	Welding connection, welding symbols, assembly drawing.	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting
8 &9	6	The student should be able to classify the shapes of rivet screws and types of riveted connections and draw a diagram illustrating the mechanism of rivet fastening.	Rivet connection, rivet shapes, types of rivet connection, assembly drawing.	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting
10	3	The student should be able to analyze the parts of a mechanical crane and prepare a break-	Application panel for mechanical crane assembly partition	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting

		down and assembly diagram that shows the sequence of assembly and the function of each part.			
11	3	The student should be able to classify types of springs, explain their uses, and draw a detailed diagram of a compression spring, specifying its basic dimensions.	Springs, their types and uses, with a drawing of a compression spring	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting
12	3	The student should be able to analyze the components of the exhaust valve and draw detailed and assembly diagrams illustrating its operation and installation.	Drawing of a schematic diagram of the exhaust valve assembly and decomposition	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting
13	3	The student should be able to distinguish between types of couplers, analyze their functions, and draw an applied diagram illustrating their assembly and the transfer of motion from one column to another.	Column connections (couplers) types, drawing an application board	Continuous guidance of students by the professor during the daily lecture	By drawing a da painting
14	3	The student should be able to classify the types of clutches, explain their practical uses, and draw an applied diagram showing their operating principle and the assembly of their parts.	Clutches, their types and uses, with an application drawing	Continuous guidance of students by the professor during the daily lecture	By drawing a da painting
15	3	The student should be able to explain the operating principle of bearings	Bearings, drawing of a friction bearing assembly	Continuous guidance of students by the professor during the daily lecture	By drawing a da painting

		and draw an assembly diagram of a friction bearing, identifying its parts and their function.			
16	٣	The student should be able to classify types of pulleys and belts, analyze their uses in power transmission, and draw assembly diagrams for different belt systems.	Pulleys and belts, their types, uses, with two drawings to assemble parts containing belt wheels of different types	Continuous guidance of students by the professor during the daily lecture	By drawing a da painting
17 &18	٦	The student should be able to define the basic concepts of spur gears and draw a spur gear and an assembly diagram that accurately illustrates the gearing process.	Gears and their types, gearboxes, basic definitions, gearbox drawing, with assembly plate for gearbox engagement	Continuous guidance of students by the professor during the daily lecture	By drawing a da painting
19 &20	٦	The student should be able to explain the basic definitions of bevel gears and draw an assembly diagram illustrating their meshing and the transmission of motion between intersecting shafts.	Bevel gears, basic definitions with assembly drawing of bevel gear engagement	Continuous guidance of students by the professor during the daily lecture	By drawing a da painting
21 &22	٦	The student should be able to use the drawing, assembly, and analysis environments in Autodesk Inventor software to create two-dimensional and three-dimensional models and produce integrated working drawings.	Introduction to Autodesk Inventor	Continuous guidance of students by the professor during the daily lecture	By drawing a da painting
23 &24	٦	The student should be able to create accurate two-dimensional engineering drawings	2D drawing environment	Continuous guidance of students by the professor during the daily lecture	By drawing a daily painting

		using drawing, editing, and setting constraints and dimensions according to standard criteria within the drawing environment.			
25 & 26	٦	The student should be able to digitally assemble mechanical parts and apply appropriate constraints to ensure proper alignment and movement between components within the assembly environment.	Assembly environment	students by the professor during the daily lecture	By drawing a daily painting
27 & 28	٦	The student should be able to simulate the movement of mechanical parts and analyze their dynamic behavior to verify the efficiency of the design and detect conflicts before implementation.	Dynamic and motion analysis environment	students by the professor during the daily lecture	By drawing a daily painting
29	٣	The student should be able to include dimensions, symbols, tables, technical notes, and parts lists to produce complete, ready-to-manufacture working drawings.	Additions to engineering drawings	students by the professor during the daily lecture	By drawing a daily painting
30	3	The student should be able to design, model, assemble and analyze part of a practical system within their specialization, and prepare a complete graphic file that reflects their skills in industrial drawing and practical applica-	A project within the jurisdiction of the relevant department for a part of any operational system.	students by the professor during the daily lecture	By drawing a daily painting

		tion.			

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Engineering Drawing for Manufacture by Brian Griffiths
Recommended books and references (scientific journals, reports...)	• Manual of Engineering Drawing by Colin H Simmons and Dennis E Maguire. • Engineering Drawing Basics Explained • https://www.sciencedirect.com/science/article/pii/B9780080942421000218
Electronic References, Websites	

13.Program Development Plan
Teaching and Learning Strategies: The course uses **hands-on CAD training** and **project-based learning** to teach 2D/3D drafting with software like AutoCAD and SolidWorks, enabling students to work on real-world projects and simulations. **Industry integration** through guest lectures, case studies, and portfolio assessments ensures students meet professional standards, with regular feedback and practical exams to monitor progress.

Course Description Form

1. Course Name:
English Language 2
2. Course Code:
METE239
3. Semester / Year:
Second year/2025-2026
4. Description Preparation Date:
10/12/2025
5. Available Attendance Forms:
Direct
6. Number of Credit Hours (Total) / Number of Units (Total)
30 Hr. /2 U
7. Course administrator's name (mention all, if more than one name)
Name: SATTAR JABBAR METTIB Email: sattar.mettib@atu.edu.iq
8. Course Objectives

Course Objectives	To enable students to communicate orally and in writing in English in everyday life situations such as introductions, shopping, travel, and work. To equip students with the ability to use basic structures and grammar accurately, including different tenses, the passive voice, and forms of advice and guidance. To develop listening and reading skills to understand diverse texts and dialogues related to lifestyles, relationships, work, and dreams. To expand students' vocabulary to better express opinions, feelings, and personal experiences. To enhance students' confidence in using English in academic and social situations.
9. Teaching and Learning Strategies	
Strategy	Presentation and Discussion: Interactive explanation of grammar and vocabulary followed by practical application and discussion to reinforce understanding. Use of Audio-Visual Aids: Employing audio clips, educational videos, and presentations to develop listening and comprehension skills. Formative Assessment: Through quizzes, homework assignments, class participation, and practice exercises to measure progress

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1& 2	2	The student should master the skill of introductions and exchanging personal information using correct grammatical structures.	**Getting to know you**	Lecture and discussion	Question and answers
3&4	2	The student should describe their lifestyle and daily habits using appropriate tenses and vocabulary.	**The way we live**	Lecture and discussion	Question and answers
5&6	2	The student should recount past events and express problems using the past tense correctly	**It all went wrong**	Lecture and discussion	Question and answers
7&8	2	The student should use shopping vocabulary and techniques correctly in practical dialogues.	**Let's go shopping!**	Lecture and discussion	Question and answers
9&10	2	e student should express their desires and future plans using appropriate	What do you want to do?	Lecture and discussion	Question and answers

		structures.			
11&12	2	-The student should ask questions and present information accurately in various communicative situations. -The student should describe people, places, and circumstances using correct adjectives and descriptive structures.	**Tell me!** **What's it like?**	Lecture and discussion	Question and answers
13&14	2	/	Review	Lecture and discussion	Question and answers
15&16	2	the student should read texts about famous figures, extract the main ideas, and express them orally or in writing.	**Famous couples**	Lecture and discussion	Question and answers
17&18	2	the student should use advice, guidance, commands, and prohibitions correctly.	**Do's and don'ts**	Lecture and discussion	Question and answers
19&20	2	The student should use correct forms of advice,	**Going places**	Lecture and discussion	Question and answers

		guidance, commands, and prohibitions. The student should be able to talk about travel and movement using appropriate vocabulary and sentence structures.			
21&22	2	The student should be able to express feelings, especially fear and emotions, using precise vocabulary.	**Scared to death**	Lecture and discussion	Question and answers
23&24	2	The student should be able to use the passive voice when talking about inventions and important events	**Things that Passives changed the world**	Lecture and discussion	Question and answers
25&26	2	The student should be able to compare dreams and reality using comparative structures and express aspirations.	**Dreams and reality**	Lecture and discussion	Question and answers
27&28	2	The student should be able to discuss work and earning a living, describe	**Earning a living**	Lecture and discussion	Question and answers

		professions and job skills, and express their future career plans using appropriate vocabulary and sentence structures accurately and clearly.			
29&30	2	The student should be able to discuss work and relationships and express their opinions in an organized and clear manner.	**Love you and leave you**	Lecture and discussion	Question and answers

11. Course Evaluation	
The first and second-semester exams are evaluated of 20 points and 10 points for the work of the year including the daily exams, the attendance, and the assignments. For the final exam, the evaluation is of 50 points.	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	New headway pre-intermediate level Student book
Main references (sources)	New headway pre-intermediate level Student book New headway pre-intermediate level Work book with key fourth edition Johne and Liz Soars
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.google.com/search?q=speak+now+3+student+book+pdf+free+download&rlz=1C1GCEA_enIQ1001IQ1001&oq=&gs_lcrp=EgZjaHJvbWUqCQgAEEUYOxjCAzIJCAAQRRg7GMIDMgkIARBFGDsYwgMyCQgCEEUYOxjCAzIJCAMQRRg7GMIDMgkIBBBFGDsYwg

	MyCQgFEEUYOxjCAzIJCAYQRRg7GMIDMgkIBxBFGDsYwgPSAQsyMzU2ODgzajBqN6gCCLACAQ&sourceid=chrome&ie=UTF-8

Course description form

1. Course Name	
Manufacturing processes 2	
2. Code Decision:	
METE212	
3. The chapter /the year	
2025-2026	
4. Date this was preparedthe description	
10/12/2025	
5. Attendance forms available	
direct	
6. Number of study hours (total)/number of units (total)	
60	
7. Name of the course administrator(If more than one name is mentioned)	
Hamzah Kadhim Hassan mailto: inkr.hamz@atu.edu.iq	
8. Course objectives	
Goals Subject Scholarship	Preparing the student to be familiar with all manufacturing processes and their various types of machining or shaping Its position, equipment, and products. He has the ability to plan the production of various products by choosing the shapes and sizes of raw materials, machines, and appropriate operating processes, sequencing these processes, and selecting machines, tools, and devices. Measurement and calculations required for this purpose and with accuracy The required efficiency and low cost.
9. Teaching and learning strategies	
The strategy	A- Cognitive objectives A1- The student will be able to understand engineering tolerances, their systems, symbols, and tables, and choose Proper pairings using special tables, various products, and various geometric combinations Mechanical skills and acquisition of skills in solving exercises for

	models with different tolerances and couplings. A2- The student will be able to understand the quality of surfaces, systems, and symbols with different degrees of surface quality Products for different manufacturing processes and different measurement methods. A3- The student will be able to identify the determinants of measurement, their different types, the limits of measurement and their uses. A4- The student will be able to know all the machining operations - lathe, milling, planing, grinding, and - their basic movements, the types and number of pieces used, their various operations and products, operating elements, cutting rates, special tables and how to use them, calculating the operating time for all operations. A5- The student will be able to prepare an operation card for various types of products and for all types of operations, which includes the sequence of operations, a diagram of each operation, the number of pieces used, the number of measurements, cutting rates, and operating time. A6- The student will be able to know all the pressure-forming processes (rolling, drawing, extrusion, forging, pressing, shearing, and punching), the foundations and types of each process, the products of each process, and calculating the forces used for each process. B - The skills objectives of the course. B1- The student will be able to practice measuring tolerances and quality of different surfaces Products with various measuring devices for this purpose with high accuracy. B2 - The student will be able to practice all machining operations and all machines Manufacturing products for various mechanical assemblies with high precision and low cost. B3 - The student will be able to train on all compression molding processes and on all machines for manufacturing various products and mechanical assemblies with high precision and low cost. B4 - The student will be able to maintain various manufacturing process machines with high skill. 7- Presentation methods (lecture). 8-Discussion methods. 9- Practical teaching methods (laboratory and workshops).

	Evaluation methods First: Test tools, essay tools, number, explain, compare, explain, and solve questions. Second - non-test tools (checklist (measurement devices), graduated rating scale, workshop exercises). C: Emotional and value-based goals C-1 Offer to design a product and ask to think about developing an integrated program for its production. C 2- Encouraging the development of thought in memorization and speculation and motivating it towards critical thinking. C-3- Developing Internet research skills to expand the cognitive horizon. C 4- Using brainstorming to produce creative ideas for some gifted students Teaching and learning methods -The student's ability to analyze, apply, and organize knowledge as well as describe solutions. -The ability to learn both simply and deep in exploring knowledge to solve existing problems. -Distinguishing that the test increases the student's motivation towards studying and furthering and is not a means of punishing him. Evaluation methods First - Test tools, essay tools (number, explain, compare, explain, solve questions. Second - Objective tests (true and false questions, multiple choice questions, interview questions -) General and qualifying transferable skills (other skills related to employability and personal development). D1- Communication, communication, and information technology skills in the work team. D2- The tendency to cooperate and work. D3- Possess linguistic skills in the art of listening and the art of persuasion and dialogue. D4- Possessing leadership qualities, strong memory, and the ability to predict and extrapolate.

10.	Course structure

the week	hours	Required learning outcomes	Name of the unit or topic	the weekLearning method	Evaluation method
1	2	Use lecture view software	Engineering tolerances, dimension tolerances, and their types, tolerance systems and tolerance ranks, tolerance elements, couplings, coupling units, types of couplings	Continuous guidance of students by the professor during the daily lecture	By solving exercises General questions and discussion
2	2	Use lecture view software	Title basis system, column basis system, symbols of pairings, tolerances for loose dimensions Preferred pairings Selection of pairings, and their economic advantages	Continuous guidance of students by the professor during the daily lecture	By solving exercises General questions and discussion
3	2	Use lecture view software	Geometric tolerances in shape and position and types of shape and position tolerances	Continuous guidance of students by the professor during the daily lecture	By solving exercises General questions and discussion
4	2	Use lecture view software	Measurement parameters, design of measurement parameters, types of measurement parameters	Continuous guidance of students by the professor during the daily lecture	By solving exercises General questions and discussion
5	2	Use lecture view software	Classification of metal fabrication, metal working, theory of factors affecting it, formation of the	Continuous guidance of students by the professor during the daily lecture	By solving exercises General questions and discussion

			bit, cutting edge, emerging cutting edge, and the theory of its formation, factors that lead to reducing its size, cooling and its importance for cutting operations, various cooling fluids.		
6	**2**	**Use lecture view software**	Measurement parameters, design of measurement parameters, types of measurement parameters The round shape, the incisive edges used, and the longitudinal and transverse feed arrows. Identifying the pens used and how to install them in relation to the workpieces. Forming lathe pens.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
7	**2**	**Use lecture view software**	Classification of the number of pieces in relation to the methods of operation, the number of cutting edges, the metals they are manufactured from, the direction of feeding into them, the geometry of	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

			turning pens and the types of pen angles, the effect of pen angles on the cutting process.		
8	**2**	**Use lecture view software**	Cutting conditions, cutting elements, uses of cutting speeds, and use of tables and speed maps,	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
9	**2**	**Use lecture view software**	How to perform group operations, calculate their components, and calculate the cutting time for each operation	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
10	**2**	**Use lecture view software**	How to use the operating card to create a process path for the product, factors that affect the choice of cutting speeds (Cutting tool properties, effect of operating elements, impact properties of the worked metal).	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
11	**2**	**Use lecture view software**	Automatic turret turning machines, studying the processes that can be operated and analyzing the processes on the product, how to prepare the operating card	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

12	**2**	**Use lecture view software**	Types of tools used on the hexagonal, quadrilateral, front, and rear heads.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
13	**2**	**Use lecture view software**	Programming automatic lathes, factors influencing operating steps	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
14	**2**	**Use lecture view software**	The student learns about the milling process, the operations that can be performed on milling machines, the parts and components of horizontal and vertical milling machines, and the nature of the work of each part.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
15	**2**	**Use lecture view software**	The student learns about machine accessories, dividing heads, tools for attaching workpieces, mandrels, and bushings.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
16	**2**	**Use lecture view software**	Types of disc milling knives Fingers, gear sharpening knives, angle milling knives.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
17	**2**	**Use lecture view**	The student learns an explanation of the steps for	**Continuous guidance of students by**	**By solving exercises General**

		software	performing milling operations, choosing the appropriate machine, the initial dimensions of the artifacts, and methods of attaching the artifacts.	**the professor during the daily lecture**	**questions and discussion**
18	**2**	**Use lecture view software**	Explain the steps for performing milling operations, choosing the appropriate machine, and the initial dimensions of the artifacts. Methods We are connecting artifacts.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
19	**2**	**Use lecture view software**	How to make a ghanafari mesh, a 7-block mesh	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
20	**2**	**Use lecture view software**	Operating rates, cutting and feeding speeds, and the basis for selecting them for different milling operations, using tables	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
21	**2**	**Use lecture view software**	The skimming process, the definition of the types of planers, the vertical plane, the operations that take place on the planing machine, the skimming	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

			capabilities available in each machine, the methods of attaching the works.		
22	**2**	**Use lecture view software**	Operating rates of cutting speeds and feeds, planer attachments such as dividing heads and special devices, angles of planer pens, and types of acting forces.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
23	**2**	**Use lecture view software**	The planer, clarification of the cutting stroke and the return stroke), methods of connection to the planer machine and operation rates, calculating the cutting time for planing, preparing the planing sequence card	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
24	**2**	**Use lecture view software**	The grinding process and an introduction to the theory of cutting and the shape of the blade in the grinding process. The grinding stones used are circumferential. Facial, side, cup, external, internal, specifications and	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

			uses, connection methods and balances		
25	**2**	**Use lecture view software**	Different grinding machines and operating capabilities for each type (external and internal cylindrical grinding machines, tool sharpening machines).	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
26	**2**	**Use lecture view software**	Preparing a comprehensive operating card for all cutting operations.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
27	**2**	**Use lecture view software**	Metal forming, forming theory, foundations of cold and hot forming, types of forming processes.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
28	**2**	**Use lecture view software**	Rolling: Basics of rolling and its methods, rolled products, sequence of operations in rolling, machines used, and conditions for completing the rolling process. Extrusion, basics of extrusion of metals and used metals, direct extrusion, reverse extrusion, types	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
29	**2**	**Use lecture**	Cutting and perforation, the	**Continuous guidance of**	**By solving exercises**

		view software	basics of cutting operations, types of molds and their parts, dimensions of the raw material and methods of selecting it, and calculation of shear strength in each case. Drawing and deep drawing, the foundations of drawing and deep drawing operations, calculating the pulling forces and special ratios in each case, types of drawing and their uses.	**students by the professor during the daily lecture**	**General questions and discussion**
30	**2**	**Use lecture view software**	Study of unconventional methods in metal forming by hydrostatic extrusion. Use of electrical discharge. Electromagnetic fields. Explosive formation and the advantages of this process.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

11. Course evaluation	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.	
12. Learning and teaching resources	
Methodological decision	Required textbooks (methodology, if any)
AMetal fabrication mills Ali Ibrahim Al-Moussawi 2008	Main references (sources)

	Recommended supporting books and references (scientific journals, reports....)
Specialized websites	Electronic references, Internet sites

1. Course Name

Course description form

Manufacturing processes 2/practical	
2. CodeDecision:	
METE212	
3. the chapter /the year	
2025-2026	
4. Date this was prepared the description	
10/12/2025	
5. Attendance forms available	
direct	
6. Number of study hours (total)/number of units (total)	
60	
7. Name of the course administrator(If more than one name is mentioned)	
Hamzah Kadhim Hasan mailto: inkr.hamz@atu.edu.iq	
8. Course objectives	
Goals Subject Scholarship	Preparing the student to be familiar with all manufacturing processes and their various types of machining or shaping Its position, equipment, and products. He can plan the production of various products by choosing the shapes and sizes of raw materials, machines, and appropriate operating processes, sequencing these processes, and selecting machines, tools, and devices. Measurement and calculations required for this purpose and with accuracy The required efficiency and low cost.
9. Teaching and learning strategies	
The strategy	A- Cognitive objectives A1- The student will be able to understand engineering tolerances, their systems, symbols, tables, and choose Proper pairings using special tables, various products, and various geometric combinations Mechanical skills and acquisition of skills in solving exercises for models with different tolerances and couplings. A2- The student will be able to understand the quality of surfaces, systems, and symbols with different degrees of surface quality Products for different manufacturing processes and different measurement methods. A3- The student will be able to identify the determinants of measurement, their different types, the limits of measurement and their uses. A4- The student will be able to know all the machining operations - lathe, milling, planning and grinding - their

	basic movements, the types and number of pieces used, their various operations and products, operating elements, cutting rates, special tables and how to use them, calculating the operating time for all operations. A5- The student will be able to prepare an operation card for various types of products and for all types of operations, which includes the sequence of operations, a diagram of each operation, the number of pieces used, the number of measurements, cutting rates, and operating time. A6- The student will be able to know all the pressure-forming processes (rolling, drawing, extrusion, forging, pressing, shearing, and punching), the foundations and types of each process, the products of each process, and calculating the forces used for each process. B - The skills objectives of the course. B1 The student will be able to practice measuring tolerances and quality of different surfaces Products with various measuring devices for this purpose with high accuracy. B2 - The student will be able to practice all machining operations and all machines Manufacturing products for various mechanical assemblies with high precision and low cost. B3 - The student will be able to train on all compression molding processes and on all machines for manufacturing various products and mechanical assemblies with high precision and low cost. B4 - The student will be able to maintain various manufacturing process machines with high skill. 7- Presentation methods (lecture). 8-Discussion methods. 9- Practical teaching methods (laboratory and workshops). Evaluation methods First: Test tools, essay tools, number, explain, compare, explain, and solve questions. Second - non-test tools (checklist (measurement devices), graduated rating scale, workshop exercises). C: Emotional and value-based goals C1- Offer to design a product and ask to think about developing an integrated program for its production. C 2- Encouraging the development of thought in memorization and speculation and motivating it towards critical thinking.

	C3- Developing Internet research skills to expand the cognitive horizon. C 4- Using brainstorming to produce creative ideas for some gifted students Teaching and learning methods -The student's ability to analyze, apply, and organize knowledge as well as describe solutions. -The ability to learn both simply and deep in exploring knowledge to solve existing problems. -Distinguishing that the test increases the student's motivation towards studying and furthering and is not a means of punishing him. Evaluation methods First - Test tools, essay tools (number, explain, compare, explain, solve questions. Second - Objective tests (true and false questions, multiple choice questions, interview questions -) General and qualifying transferable skills (other skills related to employability and personal development). D1- Communication, communication and information technology skills in the work team. D2- The tendency to cooperate and teamwork. D3- Possessing linguistic skills in the art of listening and the art of persuasion and dialogue. D4- Possessing leadership qualities, strong memory, and the ability to predict and extrapolate.

10. Course structure

the week	**hours**	**Required learning outcomes**	**Name of the unit or topic**	**the week** Learning method	**Evaluation method**
1	**2**	**Use lecture view software**	Measurement, exercises and applications On dualities, modes Tolerance zones, use Tolerance tables	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
2	**2**	**Use lecture view software**	Use special tables With free dimensional deviations, Exercises to use	**Continuous guidance of students by the professor during the**	**By solving exercises General questions and**

			Tables. Exercises on Measuring the quality of finishing Surfaces (for some products measurement laboratory).	**daily lecture**	**discussion**
3	**2**	**Use lecture view software**	Lathing: getting to know Lathe parts and their work, Identify pens used and how to install them For crafts as well Learn how to use Tables and speed maps On the lathe.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
4	**2**	**Use lecture view software**	Lathe stolen in a way The moving crow or Lathe stolen in a way Cloning device or Side ruler.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
5	**2**	**Use lecture view software**	Learn about extensions Lathe and how to install The work on it (the sample Trilogy, Chinese quartet rotary switch, rotary switch, Al-Ranaq.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
6	**2**	**Use lecture view software**	stabilizing Things not Regular The clip on Chinese Rotary or Chinese Quartet And its axis.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
7	**2**	**Use lecture view software**	Identify on Shakal Reich The producer And her relationship Deeply Pieces And circumstances Pieces The other	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

			And get to know on limit The cutter Emerging And how Its composition during practical Lathing.		
8	**2**	**Use lecture view software**	account time Pieces on Lathe And compare it with method the theory, study Reasons Fur Chat that Appear.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
9	**2**	**Use lecture view software**	Preparation Card Follow-up Processes In the workshops with Procedure an exercise practical on Lathes.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
10	**2**	**Use lecture view software**	milling, Identify machinery Milling And its accessories And specifications Machines with to explain Details on Fares And its parts.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
11	**2**	**Use lecture view software**	Identify on Knives Milling And also Identify around How a test Speed nutrition And vaccination With a machine milling And choose Follow-up Processes For the job.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
12	**2**	**Use lecture view software**	The procedure is an exercise in milling It includes Processes of the	**Continuous guidance of students by the professor**	**By solving exercises General questions**

			basic And use a head Partition.	**during the daily lecture**	**and discussion**
13	**2**	**Use lecture view software**	Milling Species Gears different(Gears Justice, conical, Helical, wormy.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
14	**2**	**Use lecture view software**	Complete the exercise by straightening the hips and shoulders in a group manner.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
15	**2**	**Use lecture view software**	Preparation Card Follow-up Processes In the workshops with Procedure an exercise practical on The gears	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
16	**2**	**Use lecture view software**	Identify on machinery Skimming In the workshop with Its components And accessories Backup she has And watch Forms from Processes that Done on The scraper.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
17	**2**	**Use lecture view software**	The procedure an exercise practical on Machine Skimming It includes Use Accessories The machine.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
18	**2**	**Use lecture view software**	Identify on Machines Grinding With a factor Mechanics	**Continuous guidance of students by the professor during the**	**By solving exercises General questions and**

			And watch Forms from Operations Grinding different And from the number, Identify in detail on Machines age the number with Procedure an exercise basic on her.	**daily lecture**	**discussion**
19	**2**	**Use lecture view software**	Identify Kind Stones Grinding different and watch Granules Itching (The incisor For stone Grinding under . Microscope study Tags And symbols existing on to forbid Grinding and comparison between them in Species different For stones.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
20	**2**	**Use lecture view software**	Identify on Devices poise to forbid Grinding and how use it, Unscrew and installation to forbid grinding, Procedure an exercise last on age the number	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
21	**2**	**Use lecture view software**	Counter Card Follow-up Processes In the workshops on machinery Skimming and grinding.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
22	**2**	**Use**	Identify on	**Continuous**	**By solving**

		lecture view software	machinery Pieces The programmer In the workshop with Its components And accessories Backup she has And watch Forms from Processes that Done By her.	**guidance of students by the professor during the daily lecture**	**exercises General questions and discussion**
23	**2**	**Use lecture view software**	Acquaintances and Skills Operator Machines programmed and His safety and stages the job on her.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
24	**2**	**Use lecture view software**	Programming And running Lathes programmed Automation And the factors Influential steps Employment.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
25	**2**	**Use lecture view software**	Programming And running Fares programmed Automation And the factors Influential steps Employment.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
26	**2**	**Use lecture view software**	Operations Formation: Identify on Operations Blacksmithing mechanical, to watch Devices used.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
27	**2**	**Use lecture view software**	Identify on Operation Rolling mill and determining Clips And products different from that produce with this method, Identify	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

			on Coins Extrusion Products that Manufactured With this method.		
28	**2**	**Use lecture view software**	Identify on Operations Shearing And perforation And unloading.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
29	**2**	**Use lecture view software**	Identify on Operations Clouds and pressing, Procedure Exercises on her products With this Roads.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**
30	**2**	**Use lecture view software**	Identify on Roads Private With formation Metals And visit Locations that Contains on machinery And devices for this method.	**Continuous guidance of students by the professor during the daily lecture**	**By solving exercises General questions and discussion**

11. Course evaluation	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.	
Learning and teaching resources	
Methodological decision	Required textbooks (methodology, if any)
AMetal fabrication mills Ali Ibrahim Al-Moussawi 2008	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
Specialized websites	Electronic references, Internet sites

Course description form

1. Course Name:
Management and occupational safety
2. CodeThe decision
METE227
3. the chapter /the year:
2025 - 2026
4. Date this was preparedthe description:
10-12 - 2025
5. Attendance forms available: Direct presence
6. Number of study hours (total)/number of units (total):

60

7. Name of the course administrator(If more than one name is mentioned)

Name: hussein younus razzaq Email: inkr.hus@atu.edu.iq

8. Course objectives

Objectives of the study subject	Teach the student the concept of quality control and its importance in various industries It serves to improve productivity and reduce the percentage of spoilage.

9. Teaching and learning strategies

The strategy	Interactive/active lecture method: In the interactive lecture method, the lecturer is keen to involve the student in the teaching process By arousing his attention and urging him to actively participate at least once in some practices Educational, such as encouraging him to express opinions, observations, inquiries, predictions, etc. Lead those Practice ensures that the student maintains his attention and follows what is going on in the lecture, which improves... The student's mental comprehension level.

10. Course structure

the week	hours	Required learning outcomes	Name of the unit or topic	Learning method	Evaluation method
the first	2	Management and its development Stages and development of management Basic principles of management Management characteristics Management levels	Administration	Interactive lecture	Asking questions to students
the second	**2**	**management jobs Industrial management Its functions the industrial engineering Characteristics of industrial management**	**Administration**	**Interactive lecture**	Asking questions to students
the third	**2**	**Location and arrangement of the industrial unit The main factors**	**Industrial unit arrangement**	**Interactive lecture**	Asking questions to students

		affecting the selection of industrial project sites Industrial unit arrangement Initial arrangement of the plant Classification of types of industrial unit arrangements Advantages, limitations, and cases in which it is applied (commodity, functional, mixed, and combined arrangement).			
Fifth	**2**	**Production planning Production planning concept Objectives of production planning and control**	**Production planning**	**Interactive lecture**	Asking questions to students
VI	**2**	**Types of production, production planning methods, linear programming methods, graphical method and transportation method**	**Production planning**	**Interactive lecture**	Asking questions to students
Seventh	**2**	**Discussing some reports**	**Discussing reports submitted by students**	**Read sample reports with discussion**	Short test
VIII	**2**	**Work study, work study methods, method study, time study, work measurement**	**Study work and standard time**	**Interactive lecture**	Asking questions to students
Ninth	**2**	**Maintenance, importance of maintenance, concept of technological system**	**Maintenance**	**Interactive lecture**	Asking questions to students
The tenth	**2**	**Types of maintenance, types of holidays**	**Maintenance**	**Interactive lecture**	Asking questions to students
eleventh	**2**	**Training The concept of training, the importance of training, training methods**	**Training**	**Interactive lecture**	Asking questions to students

twelveth	**2**	**Industrial costs and wages costs, Classification of costs, wages**	**Industrial costs and wages**	**Interactive lecture**	Asking questions to students
Thirteenth	**2**	**Industrial costs and wages Methods of calculating wages, incentives, types of incentives**	**Industrial costs and wages**	**Interactive lecture**	Asking questions to students
fourteenth	**2**	**Purchases, purchasing steps, inventory, types of stored materials and methods of controlling them**	**purchase management**	**Interactive lecture**	Asking questions to students
Fifteenth	**2**	**Industrial safety, accident, types of accidents Ways to reduce accidents Protective equipment and its types**	**Industrial safety**	**Interactive lecture**	Asking questions to students
sixteen	**2**	**The meaning of control, the meaning of quality**	**Quality control**	**Interactive lecture**	Asking questions to students
seventeenth	**2**	**Definition of quality Quality specifications Factors controlling quality Develop and improve quality Design, quality of fit International and Iraqi standard specifications**	**Quality control**	**Interactive lecture**	Asking questions to students
eighteen	**2**	**Quality control methods, examination and inspection methods, quality control steps, sampling methods, sample inspection tables**	**Quality control methods and sample inspection plans**	**Interactive lecture**	Asking questions to students
nineteenth	**2**	**Operating characteristic curve, quality of design, data collection (types and analysis)**	**Quality control methods and sample inspection plans Data collection (types and analysis)**	**Interactive lecture**	Asking questions to students

The twen-tieth	**2**	**Control charts**	**Control charts**	**Interactive lecture**	Asking questions to students
21st	**2**	**Preparing and using a mean chart**	**Control charts**	**Draw the dia-gram on the board with explanation**	Students draw the di-agram on graph paper during the lecture in order to correct their drawings later
twen-ty tow	**2**	**Preparing a stand-ard deviation chart, preparing a defect chart**	**Control charts**	**Draw the dia-gram on the board with explanation**	Students draw the di-agram on graph paper during the lecture in order to correct their drawings later
twen-ty third	**2**	**Scatterplot, how to prepare a scatter-plot**	**Control charts**	**Draw the dia-gram on the board with explanation**	Students draw the di-agram on graph paper during the lecture in order to correct their drawings later
twen-ty fourt h	**2**	**Qualitative control charts for standard deviation and per-centage of defective units, histogram (preparation and use)**	**Control charts**	**Draw the his-togram on the board with explanation**	Students draw the di-agram on graph paper during the lecture in order to correct their drawings later

25th	**2**	**Control charts for variables. Control chart for arithmetic mean**	**Types of control charts**	**Draw the diagram on the board with explanation**	Students draw the diagram on graph paper during the lecture in order to correct their drawings later
twenty-sixth	**2**	**Control charts for variables Control chart for range, control chart for standard deviation**	**Types of control charts**	**Draw the two diagrams on the board with explanations**	Students draw the diagram on graph paper during the lecture in order to correct their drawings later
27th	**2**	**Control charts for features (control chart for the percentage of defective units)**	**Types of control charts**	**Draw the diagram on the board with explanation**	Students draw the diagram on graph paper during the lecture in order to correct their drawings later
Twenty-eighth	**2**	**Control charts for features (Control chart for the number of defects in one unit)**	**Types of control charts**	**Draw the diagram on the board with explanation**	Students draw the diagram on graph paper during the lecture in order to correct their drawings later
XXIX	**2**	**Control charts for features (Control chart for**	**Types of control charts**	**Draw the diagram on the board with**	Students draw the diagram on

		the average number of defects in the vocabulary set)		**explanation**	graph paper during the lecture in order to correct their drawings later
thirty	**2**	**Discussing some reports**	**Discussing reports submitted by students with a test**	**Read sample reports with discussion**	**Short test**

11.Course evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

l exam	Second semester grade		First semester grade	
degrees	Second semester exam	Daily and monthly examinations and reports	First semester exam	Daily and monthly examinations and reports
tal 100	20 degrees	5 degrees	20 degrees	5 degrees

12.Learning and teaching resources

Required textbooks (methodology, if any)	1●Industrial management-Acer Soussan And Fares Jabaz Shalal... Authority of Technical Institutes 1990 2●Production Management - Dr. Abdel Sattar Muhammad Ali 1984
Main references (sources)	1●Dr . Muhammad Aishouni. (Set of lectures)-Hael University-Kingdom of Saudi Arabia . Attributes Control Charts – Statistical Quality Control. ●2 D. C. Montgomery
Recommended supporting books and references (scientific journals, reports....)	●Dr . Saad Sabr Muhammad. Lectures on quality control (control maps)
Electronic references, Internet sites	http://faculty.uoh.edu.sa/m.aichouni/

13.Program Development Plan

- Conducting questionnaires for students and professors to understand their needs.
- Focus on risk management and methods of reducing accidents.
- Organizing practical workshops on the use of personal protective equipment

Course Description Form

1. Course Name:
Computer Applications 2
2. Course Code:
METE228
3. Semester / Year: Year
Second year
4. Description Preparation Date:
10/12/2025
5. Available Attendance Forms:
direct
6. Number of Credit Hours (Total) / Number of Units (Total) /
30/60
7. Course administrator's name (mention all, if more than one name)

Name: Dr. Ahmed Abdulameer Subeh
Email: ahmed.subeh@atu.edu.iq

8. Course Objectives

Course Objectives:	• The relationship between the subject and the specialization • The Internet, e-commerce, and computer components • Knowing everything related to artificial intelligence

9. Teaching and Learning Strategies

Strategy	User definition of how to work on the Internet, implement e-commerce, understand artificial intelligence, etc.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Security and Networking:	What is a network? Types of networks. Basic network components	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports.
2	1	Security and Networking (Cont.):	Basic network components	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
3	1	Security and Networking (Cont.):	network security basics. understanding network threats. network troubleshooting	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
4	1	Security and Networking (Cont.):	Introduction to network troubleshooting. common network issues and symptoms. network troubleshooting tools and utilities	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
5	1	Security and Net-	using command-	Classroom	Through

		working (Cont.):	line tools for diagnostics. identifying and resolving connectivity issues . diagnosing network performance problem	lecture, theoretical presentation and electronic download	homework, attendance, class activities and reports
6	1	E – Commerce :	concepts of electronic banking services this include online banking: ATM and debit card services	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
7	1	E – Commerce :	phone banking , SMS banking , electronic alert , mobile banking	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
8	1	computer trouble shooting	introduction to computer troubleshooting , common hardware issue and solution , diagnosing software problem	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
9	1	computer trouble shooting (cont.)	hardware component , diagnosis and repair , using safe mode for troubleshooting	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
10	1	computer trouble shooting (cont.)	troubleshooting operating system issues, identifying and resolving blue screen errors, dealing with slow computer performance	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
11	1	computer trouble shooting (cont.)	virus and malware removal techniques	Classroom lecture, the-	Through homework,

			, updating drivers and software	oretical presentation and electronic download	attendance, class activities and reports
12	1	Introduction to Al	Definition of Al, History of Al, Al Techniques and Approaches	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
13	1	Introduction to Al(Cont.):	Key Characteristics of Al, Benefits of Al, Challenges and Ethical considerations.	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
14	1	Introduction to Al(Cont.):	Challenges and Limitations of Al, The Role of Data in Al Systems	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
15	1	Introduction to Al(Cont.):	Al Tools and Frameworks	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
16	1	The Role of Al in Modern Smartphones	Al-Driven Mobile Technologies, Virtual Assistants (Siri, Google Assistant, Alexa	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
17	1	The Role of Al in Modern Smartphones (Cont.):	Adaptive Learning, Real-Time Translation Services	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports

18	1	The Role of Al in Modern Smartphones (Cont.):	The Future of Al in Smartphone Technology, Challenges of Implementing Al in Mobile Devices	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
19	1	Applications and Tools of Al	Overview of Al Applications in Various Industries, Education and Healthcare	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
20	1	Applications and Tools of Al (Cont.):	Transportation and Advertising	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
21	1	Applications and Tools of Al (Cont.):	Finance, Robotics and Automation Technologies.	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
22	1	Applications and Tools of Al(Cont.):	Al in Marketing: Targeting and Personalization.	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
23	1	Applications and Tools of Al(Cont.):	Al in Image and Video Analysis, Smart Cities	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
24	1	Applications and Tools of	Future Trends in Al	Classroom lecture,	Through homework,

		Al (Cont.):	Applications and Tools.	theoretical presentation and electronic download	attendance, class activities and reports
25	1	Al and Society	Introduction to Al and Its Societal Impact, The Role of Al in Enhancing Public Safety	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
26	1	Al and Society (Cont.):	Cultural Perspectives on Al Adoption, Al and Governance: Policy Implications	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
27	1	Ethical Challenges in Al:	Introduction to Ethics in Al, Transparency and Explainability of Al Systems, Privacy Concerns in Al Data Usage	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
28	1	Ethical Challenges in Al (Cont.):	The Ethical Implications of Autonomous Systems, Ethics in Al- Driven Marketing and Advertising	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
29	1	Ethical Challenges in Al (Cont.):	Considerations in Education, Human Rights and Al Implementation	Classroom lecture, theoretical presentation and electronic download	Through homework, attendance, class activities and reports
30	1	The Future of	Future trends in Al,	Classroom	Through

		Al	recent research and emerging technologies.	lecture, theoretical presentation and electronic download	homework, attendance, class activities and reports

11.Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020)
Main references (sources)	2. Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020 3. Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", 1st Edition (2024) 4. Microsoft Office 2019 Step by Step 1st Edition by Curtis Frye & Joan Lambert 5. الخضر علي الخضر بحاث " أساسيات الحاسوب 6. الدكتور عادل عبد النور، "مدخل إلى عالم الذكاء الاصطناعي
Recommended books and references (scientific journals, reports...)	Any books within the curriculum
Electronic References, Websites	Search for each title

13.Program Development Plan
- Adopting continuous evaluation through presentations and interaction with real problems - Digital simulation using programs such as ANSYS and Solid Works Simulation. - Providing technical workshops on advanced engineering programs

Course Description Form

1. Course Name:	
Crimes of the Ba'ath regime in Iraq	
2. Course Code:	
/	
3. Semester / Year:	
2025-2026	
4. Description Preparation Date:	
15/12/2025	
5. Available Attendance Forms:	
Direct	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hr/2 hr -each week	
7. Course administrator's name (mention all, if more than one name)	
Name: Kamal Ali Hassan Email: kamal.hussein@atu.edu.iq	
8. Course Objectives	
Course Objectives	**1. To enable the student to understand the crimes of the Ba'ath regime, as documented in the laws of the Iraqi Supreme Court in 2005.** **2 .To enable the student to understand the types of international crimes.** **3. To enable the student to understand violations of Iraqi laws.**
9. Teaching and Learning Strategies	
Strategy	1. Explanation 2.Brainstorming 3. .Dialogue and discussion 4 .Using references and sources 5. Using modern teaching methods
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	• To define the concept of crime and distinguish its main categories.	The concept of crimes and their categories	Lecture and discussion	Oral test
2	2	• To explain the linguistic and technical definition of crime.	Definition of crime linguistically and technically	Lecture	Oral test
3&4	4	• To classify crimes according to their main legal categories. • To identify and classify the types of crimes committed under the Ba'ath regime.	- Categories of crimes - Categories and types of crimes committed under the Ba'ath regime	Lecture and discussion	Oral test Written test
5	2	• To explain the crimes of the Ba'ath regime according to the documentation of the Iraqi High Criminal Court Law of 2005.	Crimes of the Baath regime according to the documentation of the Iraqi High Criminal Court Law of 2005.	Lecture	Oral test
6	2	• To define the concept of international crimes.	International crimes.	Lecture	Oral test
7	2	• To distinguish between the different types of international crimes.	Types of international crimes.	Lecture	Oral test
8	2	• To review the major decisions issued by the Supreme Criminal Court	Decisions issued by the Supreme Criminal Court.	Lecture	Oral test
9	2	• To explain	Psychological and	Lecture	Oral test

		psychological and social crimes and their effects, highlighting the most prominent violations committed by the regime in Iraq	social crimes and their effects, and the most prominent violations of the Ba'athist regime in Iraq		
10	2	• To define psychological crimes and their forms.	Psychological Crimes	discussion	Written test
11	2	• To explain the mechanisms used in committing psychological crimes	Mechanisms of Psychological Crimes	Lecture	Oral test
12	2	• To identify the effects of psychological crimes on individuals and society.	Effects of Psychological Crimes	discussion	Oral test
13	2	• To define social crimes and identify their main forms	Social Crimes	Lecture	Oral test
14	2	• To explain the concept of the militarization of society and its consequences.	Militarization of Society	Lecture	Oral test
15	2	• To clarify the stance of the Ba'ath regime toward religion	The Ba'athist Regime's Stance on Religion	Lecture	Oral test
16	2	• To identify forms of violations of Iraqi laws.	Violations of Iraqi laws.	discussion	Written test
17	2	• To distinguish the forms of human rights abuses and crimes committed by the authorities	Images of human rights abuses and crimes committed by the authorities	Lecture	Oral test
18	2	• To review selected decisions related to the political and military violations of the regime.	Some decisions regarding the political and military violations of the Ba'ath regime.	discussion	Oral test
19	2	• To identify the prisons and detention centers operated by the	Prisons and detention centers of the Ba'ath regime	Lecture	Oral test

		regime			
20	2	• To explain the environmental crimes committed by the regime in Iraq.	Environmental crimes of the Ba'ath regime in Iraq	Lecture	Oral test
21	2	• To describe the effects of war, radioactive pollution, and landmine explosions	War and radioactive pollution and landmine explosions.	Lecture	Oral test
22	2	To explain the scorched-earth policy and its consequences in the destruction of cities and villages	Destruction of cities and villages: a scorched-earth policy.	discussion	Oral test
23	2	• To explain the crime of draining the marshes and its environmental and social impacts.	Draining of marshes.	Lecture	Oral test
24	2	• To describe the destruction of palm groves, trees, and crops and its consequences	Destruction of palm groves, trees, and crops.	discussion	Oral test
25	2	• To define the crimes of mass graves.	Mass grave crimes.	Lecture	Oral test
26	2	• To review the events related to mass graves perpetrated by the regime in Iraq	Events at mass graves perpetrated by the Ba'athist regime in Iraq	Lecture	Oral test
27	2	• To classify mass graves in Iraq chronologically from 1963 to 2003.	Chronological classification of mass graves in Iraq from 1963 to 2003	Lecture	Oral test
28	2	• To identify the locations of mass graves in Iraq	Locations of graves in Iraq	discussion	Oral test
29	2	• To explain the preparation and distribution of mass graves in Iraq.	Preparation and distribution of graves in Iraq	Lecture	Written test
30	2	• To explain the importance of the mass graves martyrs' database and its role in documentation	Database of martyrs of mass graves	Lecture	Oral test

11. Course evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

40 marks for the monthly exam
10 marks for daily preparation, oral exams, and report writing
50 marks for the final exam

12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Crimes of the Ba'ath regime in Iraq
Main references (sources)	1 .Ihsan Hindi, Military Occupation 2.Jundi Abdul Malik, The Criminal Encyclopedia 3 .Mass Graves in Iraq, Human Rights Watch 4. The Epistemological Foundations for Studying the Crimes of the Ba'ath Party in Iraq, by Dr. Qais Nasser and Professor Abdul Hadi Ma'touq
Recommended books and references (scientific journals, reports...)	1 .Journal of Human Rights and Public Freedoms. 2. Antonio Cassese, International Criminal Law.
Electronic References, Websites	Iraqi Center for Documenting Extremism Crimes https://iraqicenter-fdec.org/archives/514

13.Program Development Plan:

•To enhance analytical skills (analyzing decisions, studying legal texts, reading official documents) instead of focusing solely on historical narrative.

Objective: To move students from a level of knowledge to a level of legal analysis and evaluation.

•To compare crimes committed in Iraq with other international cases to understand the global framewo of violations.

• To include a section specifically addressing the impact of crimes on national identity and social recon

iation

Course Description Form

1. Course Name:	
Arabic Language2	
2. Course Code:	
/	
3. Semester / Year:	
2025-2026	
4. Description Preparation Date:	
5. Available Attendance Forms:	
Direct	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(30) Theoretical / 1 hour per week	
7. Course administrator's name (mention all, if more than one name)	
Name: Athmar Hamza Turki Email: athmar.turki.4@atu.edu.iq	
8. Course Objectives	
Course Objectives	By the end of the course, students should be able to: • Define the concept of linguistic errors. • Differentiate between verbs that take an open "tā'" and nouns that take a tied "tā."' • Distinguish between long and short "alif." • Identify types of medial hamza. • Recognize cases of writing connecting "alif" and cutting hamza. • Explain word classifications. • Identify noun markers. • Differentiate between nouns, verbs, and particles. • Extract dual forms and their derivatives. • Distinguish between singular, dual, and plural forms.

	• Explain conditions of the sound masculine plural. • Identify elements that attach to the sound masculine plural. • Define the sound feminine plural. • Identify elements attached to the sound feminine plural. • List grammatical dependencies in Arabic. • Understand the concept and function of emphasis. • Differentiate between types of emphasis. • Identify conjunction components. • Understand the meanings of conjunction particles. • Differentiate between adjectives and described nouns. • List types of substitution. • Define the five nouns. • Determine the meaning of the five verbs. • Explain the concepts of definite and indefinite nouns. • Distinguish between definite and indefinite nouns. • Identify the subject in a sentence. • Recognize subject markers. • Understand the components of vocative sentences. • Define oaths and their tools. • Explain the concept of specification. • Identify types of specification. • Define the defective and extended nouns. • Form the dual of defective and extended nouns. • Correct common linguistic errors.

9. Teaching and Learning Strategies

Strategy	• Lecture method. • Discussion method. • Error identification method. • Allocating grades for daily assignments and tests.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	1	To recognize. Linguistic errors, open & tied "tā'"	Linguistic errors, open & tied "tā'"	Theoretical Lecture	Daily quizzes, oral questions
3	2	To recognize. Long & short "alif"	Long & short "alif"	Theoretical Lecture	Daily quizzes, oral questions
4	2	To understand Connecting "alif" & cutting hamza	Connecting "alif" & cutting hamza	Theoretical Lecture	Daily quizzes, oral questions
5-7	3	To recognize. Medial & final hamza	Medial & final hamza	Theoretical Lecture	Daily quizzes, oral questions
9-10	2	To recognize. Word types & classifications	Word types & classifications	Theoretical Lecture	Daily quizzes, oral questions
10	1	To understand Dual & its derivatives	Dual & its derivatives	Theoretical Lecture	Daily quizzes, oral questions
11-12	2	Sound masculine & feminine plurals	Sound masculine & feminine plurals	Theoretical Lecture	Daily quizzes, oral questions
13-14	2	To understand Dependencies: emphasis & conjunction	Dependencies: emphasis & conjunction	Theoretical Lecture	Daily quizzes, oral questions
15-16	2	To be able to distin-guish..Adjective & substitution	Adjective & substitution	Theoretical Lecture	Daily quizzes, oral questions
16-17	2	To know.Definite & indefinite nouns	Definite & indefinite nouns	Theoretical Lecture	Daily quizzes, oral questions
18	2	To understand Oath particles	Oath particles	Theoretical Lecture	Daily quizzes, oral questions
19	1	To know.Five nouns	Five nouns	Theoretical Lecture	Daily quizzes, oral questions

20	1	To know.Vocative structure	Vocative structure	Theoretical Lecture	Daily quizzes, oral questions
21	1	To recognize Subject	Subject	Theoretical Lecture	Daily quizzes, oral questions
22-23	2	To recognize Definite & indefinite nouns	Definite & indefinite nouns	Theoretical Lecture	Daily quizzes, oral questions
24	1	To recognize Five verbs	Five verbs	Theoretical Lecture	Daily quizzes, oral questions
25	1	To be able to distinguish.Defective & extended nouns	Defective & extended nouns	Theoretical Lecture	Daily quizzes, oral questions
26-27	2	To understand Specification	Specification	Theoretical Lecture	Daily quizzes, oral questions
28-30	4	To understand Common linguistic errors applications	Common linguistic errors applications	Theoretical Lecture	Daily quizzes, oral questions

11. Course evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Standard Curriculum
Main references (sources)	• *Applied Grammar*, Khaled Abdulaziz, 2018-2019. • *Arabic Language for Second Intermediate Level*, Fatima Nazem, 2018.
Recommended books and references (scientific journals, reports...)	Scientific journals, reports, etc.
Electronic References, Websites	Specialized websites

13.Program Development Plan

<u>The content focuses on practical and professional application.</u>

• Integrating grammar with engineering texts and technical reports instead of rote memorization.

• Emphasizing common errors and correct spelling in scientific writing.

<u>Integrating activities and continuous assessment.</u>

• Weekly practical exercises in correcting engineering texts.

• Writing short reports with an emphasis on grammar and spelling.

Course Description Form

1.Course Name:	
Workshops2	
2.Course Code:	
METE214	
3.Semester / Year:	
2025-2026	
4.Description Preparation Date:	
15/12/2025	
5.Available Attendance Forms:	
Direct	
6.Number of Credit Hours (Total) / Number of Units (Total)	
90	
7.Course administrator's name (mention all, if more than one name)	
Name: nadham amwell hailbas Email: nadham.hailbas@atu.edu.iq	
8.Course Objectives	
Course Objectives	1 .To provide students with theoretical and practical knowledge of milling, grinding, planing, and turning machines, their basic components, and their functions. 2 .To enable students to select appropriate tools and fasteners and perform various machining operations accurately and efficiently. 3 .To develop machine operation and maintenance skills, including disassembly, assembly, adjustment, and lubrication, to ensure continuous performance. 4 .To enhance students' awareness of the importance of occupational safety when handling various workshop machines and to ensure adherence to industrial safety regulations. 5. To prepare students to understand advanced manufacturing processes and to handle practical challenges in a real industrial environment.
9.Teaching and Learning Strategies	
Strategy	This course is distinguished by its comprehensive coverage of basic and advanced processes in mechanical workshops, providing students with a strong theoretical and practical foundation. It combines theoretical knowledge with hands-on practical training on milling, grinding, planing, and turning

	machines, which helps students master precision machining skills and prepares them for the demands of the job market. The course also enhances students' awareness of occupational safety regulations during machine operation and maintenance, and develops their ability to use measuring and quality control tools. Furthermore, the focus on routine and operational machine maintenance improves students' proficiency in troubleshooting and ensuring business continuity, making this course a stepping stone towards advanced engineering specializations.

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1&2	16	The student should be able to operate the main horizontal milling machine efficiently and safely, understand its parts and functions, select and install appropriate milling cutters, adjust cutting and feed speeds, secure workpieces, and perform milling operations on flat and inclined surfaces and various grooves, while employing heads and dividing devices of all kinds to perform simple divisions, angles, and precise division of parts according to technical requirements	Milling Workshop •Combined Horizontal Milling Machine: Explanation of machine parts and their functions, machine operation and speed and feed testing, tools and attachments, their uses and installation methods, dividing heads, chucks, rotary table, combined milling heads, toothed rack head, slotted head. •Milling cutters: their types (cylindrical surface milling, shoulder milling, groove milling, gear cutting, and special cylindrical shape milling cutters with internal or end holes.(•Flat surface milling: selecting and installing the	Blackboard - Participatory Practical Learning	Daily quizzes - direct questions and discussion

			1appropriate cutter, adjusting cutting and feed speeds, workpiece clamping, machining sequence, performing milling operations to straighten flat, inclined, and opposing surfaces, and creating various grooves. • Dividing heads and their uses: the dividing head and its operation, simple dividing, dividing using hole discs, angle dividing, and practicing different types of dividing (part division and angle division).		
3&4	16	The student should be able to efficiently prepare and operate general machines for milling straight gears and spur gears, by applying the laws of gear cutting, selecting appropriate cutters, preparing materials, planning setup and operation processes, executing milling operations accurately, and reviewing the final dimensions according to the approved technical specifications	Milling of straight gears on general machines and straight toothed plates, laws regarding gear cutting and cutters used, preparation of materials and preparation and operation processes, carrying out milling operations, reviewing final dimensions, training on milling a straight toothed plate	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion
5&6	16	The student should be able to efficiently prepare and operate	Milling bevel gears on general-purpose machines:	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion

		general-purpose machines for milling bevel gears and helical gears, by applying the laws and calculations specific to gear cutting, selecting appropriate cutters and adjusting setting angles, preparing materials, and executing milling operations in the correct sequence, while checking and reviewing the final dimensions to ensure accuracy and conformity to technical specifications	(same method as milling spur gears(Milling helical toothed plates on general-purpose machines: (same method as spur gears)		
7&8	16	The student should be able to perform basic maintenance work on the milling machine efficiently and safely, by disassembling and assembling the spindle, machine table, cutting and feed speed boxes, understanding the mechanism of changing speeds via gears, belts and pulleys and adjusting their tension, with familiarity with the electrical control circuits for operating the machine and diagnosing simple faults and restoring it to a proper operating state.	Milling Machine Maintenance: •Disassembling and assembling the spindle •Opening, maintaining, and assembling the machine table •Opening the main cutter gearbox and understanding how to change and reassemble it •Opening the feed gearbox and understanding how to change and reassemble it •Performing speed changes using the ball bearings and pulleys, understanding how to switch and	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion

			tighten them Understanding the electrical control circuits for operating the milling machine		
9&10	16	The student should be able to operate grinding machines (external, surface, and tool sharpening) efficiently and safely, select the appropriate grinding wheel according to shape, specifications, and application, perform wheel preparation operations (balancing and leveling), adjust machine parts, feed speeds, stroke speeds, and coolant, and accurately perform grinding operations on flat, parallel, perpendicular, and inclined surfaces according to technical requirements.	Grinding Workshop •Grinding Machines (External, Surface, Tool Sharpening(•Grinding Wheels: Shapes, Types, Specifications, Uses, Preparing Grinding Wheels for Machining (Balancing, Leveling(•Surface Grinding Machines: Explanation of Machine Parts and Functions, Operating Procedure and Travel Adjustment, Feed Speed and Grinding, Workpiece Clamping Methods, Use of Cooling Fluids and Their Types • Training on Grinding Flat, Parallel, Perpendicular, and Inclined Surfaces	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion
11&12	16	The student should be able to operate a cylindrical grinding machine efficiently and safely, understand its components, adjust operating speeds	Cylindrical grinding: Machine components, operation, speed and ratio adjustment, selecting the appropriate	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion

		and feed rates, select and test the appropriate grinding wheel, secure workpieces, use cooling fluids and measuring instruments accurately, and perform various external grinding exercises and operations according to the required technical specifications.	grinding wheel for the workpiece, workpiece clamping, use of coolants and measuring instruments. • Exercises on external grinding operations: Various grinding operations using previously learned techniques, with practice.		
13&14	16	The student should be able to operate a tool sharpening machine efficiently and safely, select the appropriate machine for the tool to be sharpened, fix the cutting tool and adjust the correct geometric angles of the cutting edge, and perform sharpening operations for single, double and multi-edge tools accurately according to technical requirements and quality standards.	Tool Sharpening Machine: •Operating and handling tool sharpening machines, and testing the appropriate machine for sharpening a specific tool. •How to mount the cutting tool on the machine and determine the required angles for the cutting edge. • Performing sharpening operations on various tool models (single-edged, double-edged, and multi-edged cutting tools).	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion
15&16	16	The student should be able to perform routine maintenance on an external cylindrical grinding machine efficiently and	Maintenance of a grinding machine (general external cylindrical grinding machine:(•How to change	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion

		safely, by changing and adjusting the coolant level, identifying lubrication points and selecting appropriate oils and greases, and changing and adjusting the speed transmission belts for the grinding wheel and workpiece to ensure efficient and continuous operation.	the coolant and determine the required level. •Identifying the machine's lubrication points and the appropriate type of oil and grease. Performing the replacement of the grinding wheel and workpiece speed drive belts.		
17&18	16	The student should be able to distinguish between vertical and rammers in terms of use and operating fields, understand the machine parts and their mechanism of operation, select and install the appropriate rammer, adjust cutting and feeding speeds and grafting rates, and perform ramming operations on flat and inclined surfaces at different angles accurately and in accordance with technical requirements.	Planing Workshop Vertical Planers: • ((Explanation only Butt Planers: The • difference between their uses, machine parts and operation, workpieces and surfaces that can be machined on each, tools used, methods of fixing them, cutting and feed speeds, inlay rates, and testing of each • Exercises for planing flat and inclined surfaces at different angles	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion
19&20	16	The student should be able to perform complete milling operations to produce complete surfaces and workpieces such as machine parts, V-block pieces, and	Exercises for scraping surfaces and entire workpieces, parts of fixtures, V-blocks, drill bits	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion

		drill bases, by reading blueprints, selecting appropriate milling tools, adjusting cutting and feed speeds, and accurately achieving the required dimensions and angles according to technical specifications.			
21&22	16	The student should be able to perform various planing operations to produce internal and external grooves in different shapes, and apply diverse planing exercises to workpieces, while adjusting planing tools, cutting speeds, and feed rates to achieve the required accuracy in dimensions and shapes according to technical specifications.	•Training on scraping and creating grooves on workpieces •Exercises for creating internal and external grooves of various shapes • Various scraping exercises	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion
23&24	16	The student should be able to efficiently perform maintenance on the threshing machine, including opening the crocodile, maintaining the stroke-length control parts and changing their position, performing the required lubrication and greasing operations, and inspecting and adjusting the oil	Maintenance of the planing machine: • Open the alligator clip and perform maintenance on the stroke control components, as well as change the stroke position. Perform various lubrication and greasing operations and open the oil pump.	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion

		pump to ensure that the machine operates accurately and smoothly according to technical standards.			
25&26	16	The student should be able to efficiently perform eccentric turning and four-way sawing operations by selecting appropriate workpiece clamping methods, adjusting the machine and cutting tools, and executing exercises on various eccentric workpieces accurately according to the required technical specifications	Turning Workshops •Eccentric turning, turning using a four-way sample, and special workpiece clamping methods. Exercises on various eccentric workpieces.	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion
27&28	16	The student will be able to perform eccentric turning exercises for various workpieces (door crank, two doors, three doors, four doors), with precise adjustment of the machine and cutting tools, and ensuring the accuracy of the required dimensions and angles according to the drawings and technical specifications.	Eccentric turning exercises: Performing eccentric turning exercises (one door crank; two doors; three doors; four doors)	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion
29&30	16	The student should be able to perform external and internal turning operations and shape turning using various shape tools,	•Turning external and internal rotations and shaping Exercises for various turning	Blackboard - Participatory Practical Learni	Daily quizzes - direct questions discussion

		understand turret lathes and use speed and feed tables, prepare process flowcharts for machining diverse products, adjust and prepare tools, and perform lathe maintenance including disassembling and maintaining three- and four-way samples, the tailstock, the micro and macro plotters, and maintaining cutting speed boxes to ensure operational accuracy and efficiency.	operations using shaping tools Turret Lathes: (Explanation only(•General overview of turret lathes and the use of speed and feed charts •Sequencing the machining of different products and preparing their operation sequences •Tools and tools used, their adjustment methods, and preparation for working with various workpieces. How to prepare operation sequence charts Lathe Maintenance: •Disassembling and maintaining three- and four-way samples. •Disassembling and maintaining the tailstock. •Disassembling and maintaining the micro and max plotters. • Maintaining the cutting gearbox.		

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	ورش تشغيل المعادن – د. إبراهيم غالي (مرجع عربي أساسي في

	تكنولوجيا الورش والإنتاج – د. سيد عليوة (يدرس في كليات الهندسة بالعالم العربي)
Main references (sources)	Machine Tool Practices – Richard R. Kibbe, et al. Fundamentals of Metal Machining and Machine Tools – Geoffrey Boothroyd & Winston A. Knight. تكنولوجيا الورش والإنتاج – د. سيد عليوة
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	